WE CLAIM:

- covalently crosslinked component; and at least one covalently crosslinked component, wherein the ionically crosslinked component is selected from a polysaccharide, a polyanion, or a polycation.
 - 2. The crosslinked biocompatible material of claim 1

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 wherein the ionically crosslinked component is alginate.
 - 3. The crosslinked biocompatible material of claim 2 wherein the alginate is a high G block alginate having at least 60% α -L-guluronic acid.
 - 4. The crosslinked biocompatible material of claim 3 wherein the α -L-guluronic acid comprises at least 70% α -L-guluronic acid.
 - 5. The crosslinked biocompatible material of claim 2 further comprising a biologic encapsulated by the material.
 - 6. The crosslinked biocompatible material of claim 5, wherein the material is effective to provide immunoprotection for the biologic in a physiological environment.
 - 7. The crosslinked biocompatible material of claim 6, wherein the material provides immunoprotection of the biologic when xenotransplanted.
 - 8. The crosslinked biocompatible material of claim 5, wherein the biologic is a biologically active material or a diagnostic marker.



- 9. The crosslinked biocompatible material of claim 8, wherein the biologically active materials are living cells selected from islet of Langerhans, dopamine secreting cells, crythropoietin secreting cells, nerve growth factor secreting cells, parathyroid cells, or norepinephrine/-metacephalin secreting cells.
- 10. The crosslinked biocompatible material of claim 8, , wherein the biologically active material is a drug
- at least one ionically crosslinked component; and at least one covalently crosslinked component is derived from a polyalkylene oxide.
- 12. The crosslinked biocompatible material of claim

 11, wherein the covalently crosslinked component is polyethylene glycol diacrylate.
- 13. The crosslinked biocompatible material of claim
 11, further comprising a biologic encapsulated by the material.
- 14. The crosslinked biocompatible material of claim

 13, wherein the material is effective to provide immunoprotection

 for the biologic in a physiological environment.
- 15. The crosslinked biocompatible material of claim
 14, wherein the material provides immunoprotection of the
 biologic when xenotransplanted.

- 16. The crosslinked biocompatible material of claim
 13, wherein the biologic is a biologically active material or a
 diagnostic marker.
- 17. The crosslinked biocompatible material of claim
 16, wherein the biologically active materials are living cells
 selected from the islets of Langherhans, dopamine secreting
 cells, erythroprotein secreting cells, nerve growth factor
 secreting cells, hepatocytes, adrenaline/angiotensin secreting
 cells, parathyroid cells, or norepinephrine/metacephalin
 secreting cells.
- 18. The crosslinked biocompatible material of claim
 16, wherein the biologically active material is a drug.
- 19. A crosslinkable biocompatible mixture comprising:

 Component; and
 at least one ionically crosslinkable component, and at least one
 covalently crosslinkable component, wherein the ionically
 crosslinkable component is selected from a polysaccharide, a
 polyanion, or polycation.
- 20. The crosslinkable biocompatible mixture of claim 19, wherein the ionically crosslinkable component is alginate.
- 21. The crosslinkable biocompatible mixture of claim 20, wherein the alginate is capable of ionically crosslinking by adding multivalent cations to the mixture.
- (ANCIED 22. The crosslinkable biocompatible mixture of claim 19, wherein the composition ratio between the ionically crosslinkable component and the covalently crosslinkable

component is effective for the stable crosslinking of the mixture, whereby a gelled encapsulation material is formed.

- A. AMENDED 23. The crosslinkable biocompatible mixture of claim 22, wherein the concentration and the molecular weight(s) of the covalently crosslinkable component are effective to provide immunoprotection to the encapsulated functional core once the mixture has been crosslinked.
 - A·2 24. The crosslinkable biocompatible mixture of claim pH compatible with the living tissue or cells.
 - CANCELLED [25. The crosslinkable biocompatible mixture of claim 24, wherein the osmolarity of the mixture is about 290 milliosmoles per kilogram and the pH is about 7.4.]
 - MENDFD 26. The crosslinkable biocompatible mixture of claim 23, wherein the concentration and molecular weight(s) of the covalently crosslinkable component are effective for the controlled release of the biologic or components of the biologic once the mixture has been crosslinked.
 - 27. A crosslinkable biocompatible mixture comprising: at least one ionically crosslinkable component; and at least one covalently crosslinkable component, wherein the covalently crosslinkable component is a polyalkylene oxide.
- 28. The crosslinkable biocompatible mixture of claim acrylated and
 27, wherein the polyalkylene oxide is capable of covalently crosslinking by free radical polymerization.

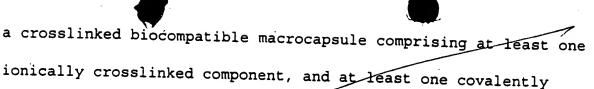
- 29. The crosslinkable biocompatible mixture of claim 27, wherein the polyalkylene oxide is polyethylene glycol diacrylate.
- 27, wherein the composition ratio between the ionically crosslinkable component and the covalently crosslinkable component is effective for the stable crosslinking of the mixture, whereby a gelled encapsulation material is formed.
- AMENDED 31. The crosslinkable biocompatible mixture of claim concentration

 A.3 30, wherein the consentrator, and the molecular weight(s) of the covalently crosslinkable component are effective to provide immunoprotection to the encapsulated functional core once the mixture has been crosslinked.

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- 32. The crosslinkable biocompatible mixture of claim
 31, wherein the mixture has an osmolarity and pH compatible with
 living tissue or cells.
- (ANCELED [33. The crosslinkable biocompatible mixture of claim 32, wherein the osmolarity of the mixture is about 290 milliosmoles per kilogram and the pH is about 7.4.]
- 31, wherein the concentration and molecular weight(s) of the covalently crosslinkable component are effective for the controlled release of the biologic or components of the biologic once the mixture has been crosslinked.
- •4 [35. A retrievable implantation material, comprising:



ionically crosslinked component, and at least one covalently crosslinked component, whereby said macrocapsule encapsulates s microcapsule(s) of a biologic.

36. The retrievable implantation material of claim 35, wherein the macrocapsule provides immunoprotection to the engapsulated microcapsule(s) or biologic when xenotransplanted.

A'-1 ADD CLAIM: 37